

We claim:

1. A process for the preparation of methyl formate by reacting methanol with carbon monoxide at a pressure of from 0.5 to 10 MPa abs. and a temperature of from 50 to 150°C in the presence of a metal alkoxide as catalyst in a reactor, in which a gas stream is withdrawn from the reactor, entrained methyl formate is removed from this gas stream by condensation, and all or some of the remaining gas stream is returned to the reactor as circulating-gas stream, which comprises setting a mean gas superficial velocity of from 1 to 20 cm/s in at least one region of the reactor in which the gas flows essentially in one direction.
2. A process as claimed in claim 1, wherein a mean gas superficial velocity of from 2 to 10 cm/s is set in at least one region of the reactor in which the gas flows essentially in one direction.
3. A process as claimed in either of claims 1 and 2, wherein the reaction is carried out at a concentration of catalyst employed of from 0.01 to 2 mol/kg of liquid reaction mixture.
4. A process as claimed in any one of claims 1 to 3, wherein the metal alkoxide employed is potassium methoxide.
5. A process as claimed in any one of claims 1 to 4, wherein the reaction is carried out at a temperature of from 60 to 85°C.
6. A process as claimed in any one of claims 1 to 5, wherein the reaction is carried out at a pressure of from 2 to 4 MPa abs.
7. A process as claimed in any one of claims 1 to 6, wherein a molar ratio between the total amount of methanol fed to the reactor and the amount of freshly supplied carbon monoxide of from 1.4 to 3.3 is set.
8. A process as claimed in any one of claims 1 to 7, wherein a bubble column is employed, and this is operated under co-current conditions with respect to the feed of the methanol-containing liquid stream and the carbon monoxide-containing gas stream.

Drawing

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9. A process as claimed in any one of claims 1 to 8, wherein the reaction is carried out in a cascaded reactor.
10. A process as claimed in claim 9, wherein the uppermost zone  
5 of the cascaded reactor is operated at a temperature of from 80 to 150°C.
11. A process as claimed in any one of claims 1 to 10, wherein  
10 the gas stream withdrawn from the reactor is separated in a rectifying column into a methyl formate-containing bottom stream and a carbon monoxide- and methyl formate-containing top stream, entrained methyl formate is removed from the top stream by condensation, and all or some of the remaining gas stream is fed back to the reactor as circulating-gas stream.

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